

REMARKS

Introduction

In response to the Office Action dated July 27, 2007, Applicants have amended the specification and claims 1 and 4, and cancelled claims 5 and 6 without prejudice. Claim 2 has been previously cancelled without prejudice. Claims 9-16 are withdrawn. No new matter is introduced by this amendment. The amendments are supported, at a minimum, by the subject matter of the original claim 4, and by the specification at page 14, line 27 to page 15, line 5. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Claim Rejections Under 35 U.S.C. § 112

Claim 1 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is traversed. Specifically, the Office Action, at page 2, asserts that the term “almost reached” is indefinite.

Applicants have amended claim 1 to correct the asserted informality. Thus, Applicants submit the claims fully comport with the requirements of 35 U.S.C. § 112.

Claim Rejections Under 35 U.S.C. § 102 and 35 U.S.C. § 103

Claims 1, 3, 6, 7, and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Abraham, U.S. Patent No. 5,766,796. This rejection is traversed. Please note that claim 6 has been cancelled, and thus the rejection is moot with respect to claim 6.

Claims 4 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Abraham in view of Ohsaki, U.S. Patent No. 5,856,043. This rejection is traversed. Please note that claim 5 has been cancelled, and therefore this rejection is moot with respect to claim 5.

Amended independent claim 1 recites, in part, “wherein **the positive electrode active material layer is made of spinel lithium manganate** as a changeable electrode active material, and **the negative electrode active material layer is made of lithium titanate** as an unchangeable electrode active material, the changeable electrode active material is an active material having a characteristic in which, once a maximum charging capacity of the changeable electrode active material is reached during charge, a change in voltage of the changeable electrode active material becomes greater than that before the maximum charging capacity thereof is reached, the unchangeable electrode active material is an active material having a characteristic in which, even when the maximum charging capacity of the changeable electrode active material is reached during the charge, a voltage of the unchangeable electrode active material is the same as that before the maximum charging capacity of the changeable electrode active material is almost reached, and **a charging capacity of the negative electrode active material layer is 120% or more relative to the charging capacity of the positive electrode active material layer.**”

In order to establish a *prima facie* obviousness under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490 F. 2d 981, 180 USPQ 580 (CCPA 1974). Further, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F. 3d 977, 988

(Fed. Cir. 2006). At a minimum, the cited prior art does not disclose (expressly or inherently) the above recited limitation.

The Office Action, at page 3, asserts that all of the limitations of claim 1 are disclosed by Abraham in the abstract and FIG. 1. Abraham, however, discloses an anode A fabricated as a composite electrode sheet consisting of the electroactive $\text{Li}_4\text{Ti}_5\text{O}_{12}$, a high surface-area carbon (such as acetylene black) and the polymer electrolyte, as discussed at column 4, lines 24-27. The cathode C is also fabricated as a composite electrode consisting of LiMn_2O_4 , acetylene black carbon and the polymer electrolyte, as discussed at column 4, lines 34-36. The $\text{Li}_4\text{Ti}_5\text{O}_{12}$ //PAN electrolyte/ LiMn_2O_4 cell was fabricated by sandwiching a 50 μm thick PAN polymer electrolyte with a 28 μm thick $\text{Li}_4\text{Ti}_5\text{O}_{12}$ electrode and a 46 μm thick LiMn_2O_4 electrode with capacities of 5.9 mAh and 6.7 mAh (113.6% of capacity of the anode), respectively, according to column 7, at lines 30-34.

However, Abraham does not teach or suggest that the positive electrode active material layer is made of spinel lithium manganate (LiMn_2O_4) as a changeable electrode active material, and the negative electrode active material layer is made of lithium titanate ($\text{Li}_4\text{Ti}_5\text{O}_{12}$) as an unchangeable electrode active material, and a charging capacity of the negative electrode active material layer (lithium titanate: $\text{Li}_4\text{Ti}_5\text{O}_{12}$) is 120% or more relative to the charging capacity of the positive electrode active material layer (spinel lithium manganate: LiMn_2O_4), as required by claim 1. Further, the Office Action, at page 4, admits that Abraham fails to teach that the capacity of the anode ($\text{Li}_4\text{Ti}_5\text{O}_{12}$) is greater than the capacity of the cathode (LiMn_2O_4).

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper*

Life Sciences, Inc., 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Because Abraham does not disclose that the positive electrode active material layer is made of spinel lithium manganate (LiMn_2O_4) as a changeable electrode active material, and the negative electrode active material layer is made of lithium titanate ($\text{Li}_4\text{Ti}_5\text{O}_{12}$) as an unchangeable electrode active material, and a charging capacity of the negative electrode active material layer (lithium titanate: $\text{Li}_4\text{Ti}_5\text{O}_{12}$) is 120% or more relative to the charging capacity of the positive electrode active material layer (spinel lithium manganate: LiMn_2O_4), as required by claim 1, Abraham does not anticipate claim 1.

Applicants further submit that Funayama et al. do not suggest the claimed granular thin magnetic film and magnetic component.

The Office Action, at page 4, asserts that Ohsaki discloses an anode capacity greater than a cathode capacity. However, Ohsaki, at column 8, line 62 to column 9, line 7, states:

In the non-aqueous electrolyte secondary battery of the present invention, the capacity of the anode, i.e. the designed capacity is adjusted to be larger than that of the cathode. The designed capacity may be calculated from the charging capacity per unit weight of electrode active material determined in a three electrode-type cell or coin-shaped cell with lithium metal used as reference or opposite electrode and the total amount of the active material. Provided the **designed capacity of the cathode is the unit 1 that of the anode should desirably be adjusted to over 1 to 1.6, preferably 1.05-1.4**, to provide a non-aqueous electrolyte secondary battery having an improved safety.

Further, Ohsaki, at column 3, lines 42-50, states:

The **anode** used in the non-aqueous electrolyte secondary battery may have a compacted body comprising **pressed graphitized vapor-grown carbon fibers**.

Furthermore, the anode may preferably be shaped from a compacted body comprising an electric conductor coated with active materials, the active materials forming an active material layer on the surface of the conductor. The active materials are comprised of the graphitized vapor-grown carbon fibers bonded to each other by a binder.

Additionally, Ohsaki, at column 7, lines 24-29, states:

The **cathode** used for the non-aqueous electrolyte secondary battery of the present invention is comprised of a **lithium-containing complex oxide**. Preferred cathodes are formed by coating an electric conductor with an active material layer comprising a lithium-containing complex oxide and a dispersed in a binder.

Thus, the anode of Ohsaki is “pressed graphitized vapor-grown carbon fibers,” and is completely distinct from the anode of claim 1, which requires that “the negative electrode active material layer is made of lithium titanate as an unchangeable electrode active material.”

Therefore, Ohsaki does not teach or suggest that a charging capacity of the negative electrode active material layer (lithium titanate: $\text{Li}_4\text{Ti}_5\text{O}_{12}$) is 120% or more relative to the charging capacity of the positive electrode active material layer (spinel lithium manganate: LiMn_2O_4) as required by claim 1.

Thus, at a minimum, the combination of Abraham and Ohsaki fails to teach or suggest the forgoing limitation, and therefore does not render claim 1 obvious.

Under Federal Circuit guidelines, a dependent claim is allowable if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987).

Thus, as independent claim 1 is allowable for the reasons set forth above, it is respectfully submitted that dependent claims 3, 4, 7, and 8 are allowable for at least the same reasons.

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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